Konami M2 Technical and Historical Documentation

Revision 1 – 12/25/2018

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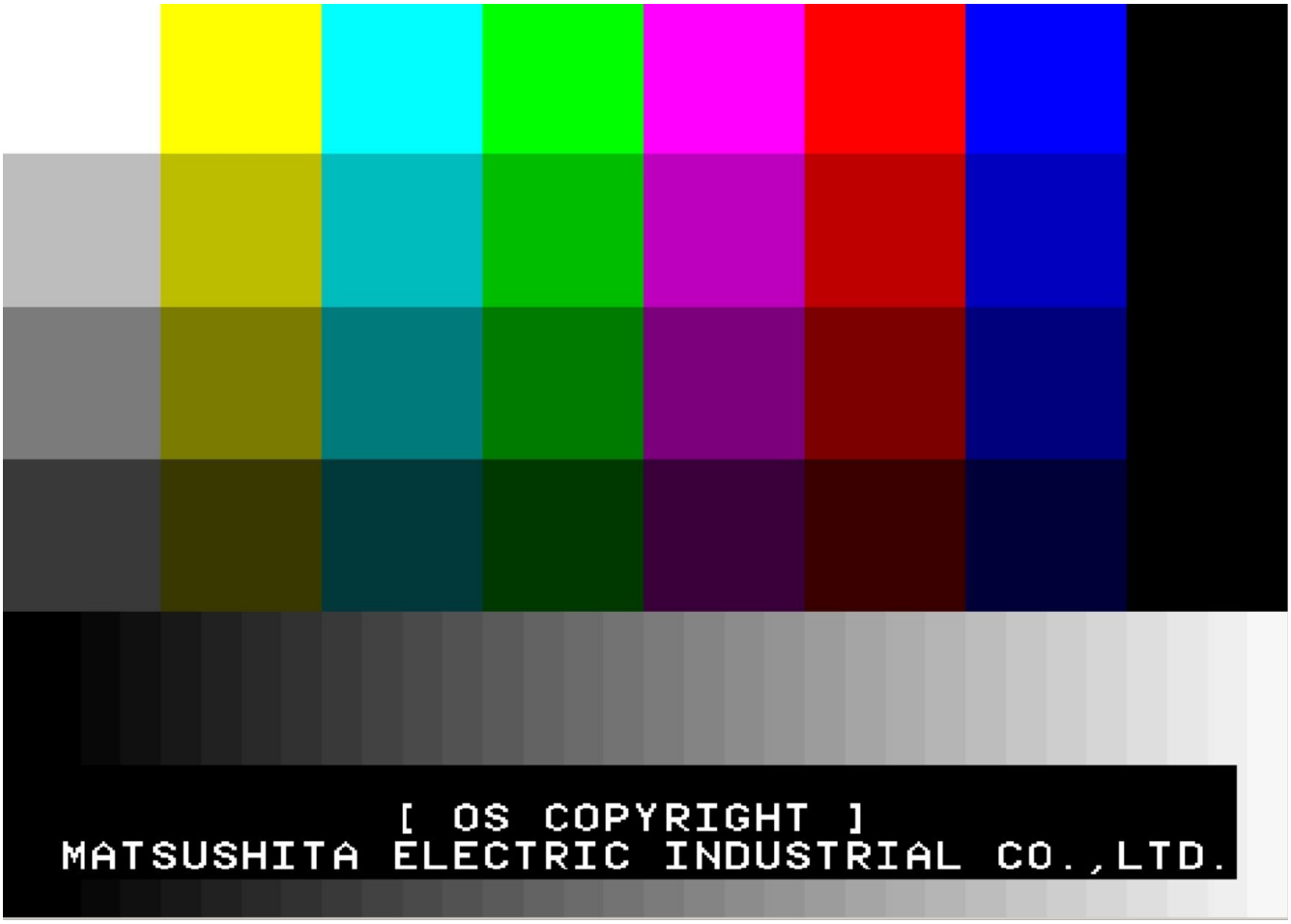


Historical Overview of the M2 Platform

The M2 hardware platform was initially derived from development by the 3DO Company as a set of technical specifications that were to be licensed to third party hardware manufacturers (in the same vein as the original 3DO console and specifications, which were licensed and produced as standalone consoles by Panasonic, Sanyo, and Goldstar) so that they could produce their own consoles with the M2 technology. Primarily designed by RJ Mical and Dave Needle, the M2 hardware was targeted to be 2-3X more powerful than the Sony Playstation 1 / Sega Saturn / and Nintendo 64, and close to parity with the Lockheed Martin designed Sega Model 2 arcade hardware.

Due to financial pressures, the 3DO company sold the entire M2 hardware platform to Matsushita / Panasonic for $100,000,000 with the intent that Panasonic would launch the M2 as a competitor console to the PS1/Saturn/N64. Unfortunately Panasonic canceled the M2 launch and hardware platform as a home console.

Panasonic, looking to recoup their investment on the M2 platform, utilized the hardware in the following manner

1: As a standalone kiosk system for information and educational content (GM informational kiosks in car dealerships / home design software / elder care software)

2: As point of sale hardware for ATM's and vending machines in Japan

3: Licensed to Konami for arcade game development (deal rumored to have existed before the home console was canceled, as Konami M2 games were scheduled for release to the home market)

While the kiosk and point of sale hardware is interesting from a historical standpoint and remains the only “consolized” version of the M2 hardware, only one true “game” exists for the hardware ; ISMA Racing, a semi-complete beta of an intended launch racing game for the M2 home console. Additionally a 2D “Easter Egg” vertical shooting game was released as a standalone game but it was derived from an Easter Egg contained within ISMA Racing and is not considered a separate game itself. Some betas of other games (Iron and Blood) and tech demos (Dolphin / Ape Bot) remain

in M2 collectors hands and have not been released to the public at the initial writing of this document.

In regards to realized gaming releases, this leaves the Konami M2 hardware platform as the one true source for playable and finished video games. Due to the continued limited knowledge base for Konami M2 hardware, this document is intended to provide as much information and technical knowledge known as of 12/25/2018. All revised versions of this information will be noted on the first page of this document, and all changes will be cataloged in an appendix attached at the end.

Note : upon updating of this document to new versions, the above date will be amended to reflect the last date of revision.

Konami M2 Platform Released Games

Tobe! Polystars – 1997 – Horizontal 3D Shooter
Battle Tryst – 1998 – 3D Fighting Game
Evil Night – 1998 – Light Gun Game (also known as “Hell Night”)
Total Vice – 1997 – Light Gun Game
Heat of Eleven 98 – 1998 – 3D Soccer Game

Rumored Cancelled Releases

To date there have been no rumors of any canceled Konami games on the M2 hardware, nor any information of any betas or builds of known software. As such, the above software listing, as of the revision date of this document, should be considered the entirety of the Konami M2 software library.

JAMMA Standard Information

All releases of the above games by Konami use a 56 pin JAMMA standard interface. While many of the schematics list stereo output as the only audio option via a four pin header (see appendix for schematics for M2 board revisions) on the JAMMA PCB, all M2 boards will output MONO sound from the JAMMA edge, even if the schematic for a particular game does not list this as an option. DIP 1 on the JAMMA board must be set to OFF for Mono sound output.

For all non-lightgun M2 games, a kick harness is NOT required, as none of the other games utilize more than a standard four button configuration which is within JAMMA specs.

Konami M2 Target Resolutions

Tobe! Polystars – Standard resolution / 15Khz
Battle Tryst – Standard resolution /15Khz
Evil Night – Medium resolution / 25Khz AND 15Khz Standard Resolution
Hell Night – Medium resolution / 25Khz
Total Vice – Medium resolution / 25Khz AND 15Khz Standard Resolution
Heat of Eleven 98 – Standard resolution / 15Khz

note : Hell Night runs at medium resolution where Evil Night runs at standard AND medium resolution. Resolution is tied to game code revisions, and NOT ALL VERSION of each release

Resolution DIP Switch on Konami M2 Boards

Each M2 arcade hardware release includes a resolution DIP Switch on the upper most (M2 hardware specific) board in the cage stack. (see diagram below) This allows conversions of medium resolution boards to run standard resolution games. (see section “Conversions” for more information) Attempting to run Total Vice / Hell Night at standard resolution will cause the BOOT hardware check to fail and / or the M2 hardware to boot loop at the OS screen.

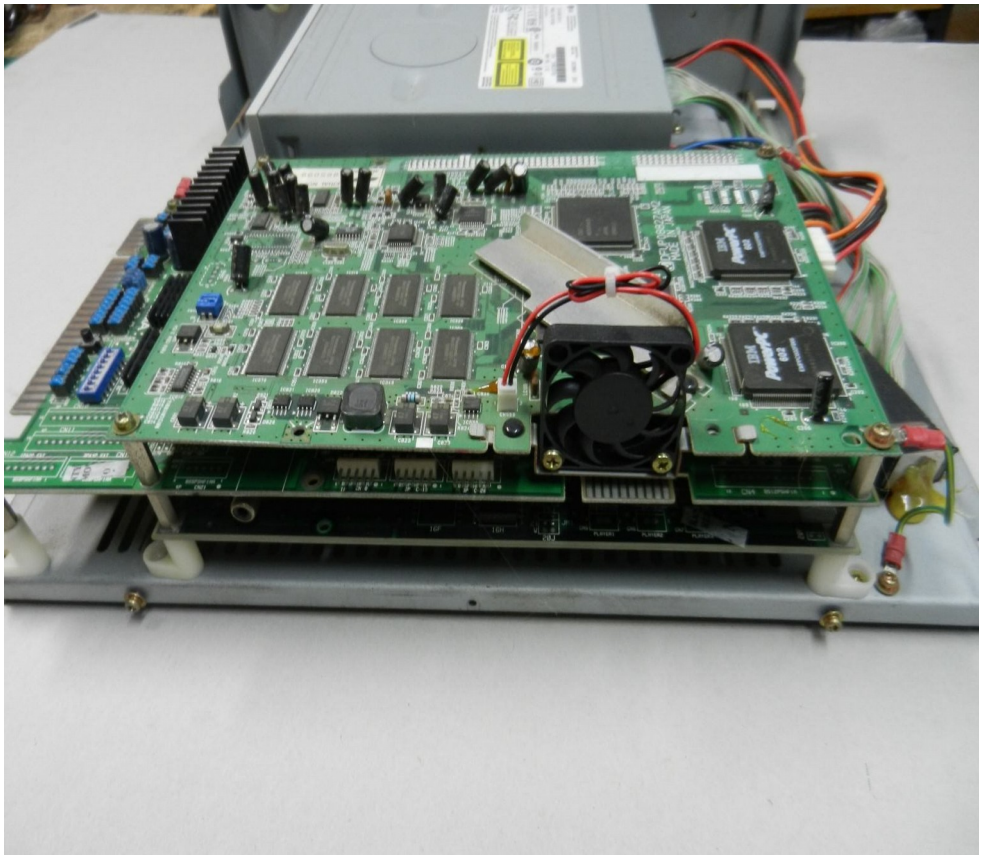
_____M2 BOARD_____DIP___ (Uppermost Board)
_____JAMMA BOARD_____EDGE (Bottom OR Middle Board)
_____SUB BOARD_____(Always Bottom or Not Included)

(See appendix for diagram of DIP resolutions)

Note : the above diagram is to be read with the hardware sitting flat on a table. Looking at the PCB stack from the side or from the top, the upper most board will ALWAYS be the M2 hardware PCB. The JAMMA edge PCB will either appear in the middle of a three (3) PCB stack, or at the bottom in a two (2) PCB stack. The resolution DIP Switch can be found near to the bottom of the M2 top layer board. It is a small, two DIP Switch assembly in the color blue.

M2 Hardware – 2 board configuration

M2 Hardware – 3 board configuration



Timekeeper RTC Chip

Most Konami M2 boards (except Tobe! Polystars and Total Vice) are equipped with a Timekeeper RTC Chip that holds certain key data that acts as a rudimentary form of copy protection for the M2 hardware. Upon boot, the hardware checks this stored data in the RTC Chip against what is encoded on the game cd and on the EEPROM. If a match is made, the game will complete its POST operation and boot the game. If there is a mismatch between the data stored on the RTC and what is expected from the software, an “RTC” error will appear during the initial hardware boot test sequence and the hardware will restart in an infinite boot loop.

The RTC chip is equipped with a battery built into the structure of the chip itself, and like all batteries will lose capacity over time until it becomes flat. Once this battery has failed, a data match cannot be made and the M2 will not boot the software.

RTC Chip Fixes

A failure of the RTC Chip on Konami M2 hardware is not a death sentence for the board. Multiple fixes are available, as described below.

1 : Replacement of the RTC Chip – part # m48t58y-70pc1 RTC

Note : the RTC chip can be desoldered from it's board and replaced with an exact part. The suggested method is to solder in a socket, then insert the RTC chip for ease of replacement in future repairs. After replacement, the RTC will need to be reinitialized. The methodology for this procedure is included in the next section of this document.

2 : Running patched disc images w/ RTC checks removed

Note : M2 enthusiasts continue to refer to patched disc images that can be burnt and run, where the RTC code check has been patched out, or removed, from the data on the disc. This way the software never expects a data match to the RTC, and the board will boot software as it normally would had the RTC been functioning and the data match criteria met. While I have no reason to believe these patched images do not exist, I personally have never found nor been provided with an RTC bypassed disc image in my time searching. Your mileage may vary but the quickest solution at the time of writing this document is replacement of the RTC chip.

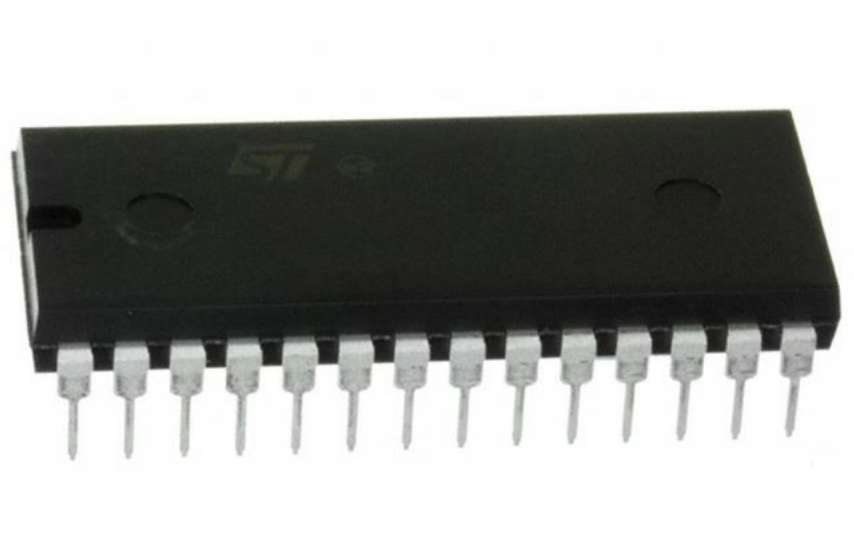
3 : Replacing battery within RTC chip

Note : with the proper skill, the RTC chip can be cut into to where the battery is installed inside. At this point the battery can be replaced via soldering, or by soldering in a battery holder for quicker installation in the future. While this is an effective fix, considering the widespread availability of RTC chips on the market, my suggestion is to use method 1 or 2. The assumption being that if you possess the skill to extract the battery from the RTC chip, you can also desolder the chip and install a socket in it's place.

Reinitializing the RTC Chip

Upon replacement of the RTC Chip, it must be reinitialized with the correct data for it to allow the hardware tests to pass and for the game to boot. Upon starting up the M2 hardware after re-installation of a functioning RTC, hold down the “Test Switch” during the entire boot test sequence. This will reinitialize the RTC clock, and the board will function as normal until such time as the battery on your replacement RTC dies.

part # m48t58y-70pc1 RTC



note : as of 3/30/2018, these RTC chips are available for purchace via Digikey or Mouser Electronics. Approximate price of $17.09 per chip.

Note : Not all M2 boards have a test button. On board revisions w/o test button on pcb, test switch will need to be wired to JAMMA edge and held via an external button)

Replacement of the optical disc drive

The Konami M2 arcade platform utilizes standard IDE based cd-rom drives for game based operation. Unlike other disc based arcade platforms, the M2 streams data from the drive and stores what is needed in RAM during game play, vs. other optical platforms where the entire game is loaded into RAM at start-up and the drive then goes idle. Due to this constant accessing of data, the M2 was known to be a very unreliable hardware platform for arcades (where the drive would be running all day, every day) as the cd-rom drive would fail frequently.

The IDE cd-rom drive can be replaced quite easily on the M2 platform, but not all IDE cd-rom drives are compatible. There is no known list of “approved” donor drives. My suggestion is a) you attempt to find a known working part # matching drive to the drive that has failed on your board or b) bulk buy IDE cd-rom drives (extremely cheap) and test until you find a cd-rom drive that will work on the M2 hardware. Note : set jumper to MA, or “Master”.

Power connection is available from the JAMMA board on M2 hardware via a four (4) pin Molex connector, and the IDE ribbon cable connects between the JAMMA board and the drive itself. If your ribbon cable is damaged, replacement IDE ribbon cables are readily available to purchase.

To date there is no solid state cd-rom drive replacement that has been attempted on the M2 platform. It's possible a solid state cd-rom replacement is feasible, but considering the small collection of people interested in the M2 hardware and the games available on the platform, development may never start / finish. We would need a universal solid state adapter for cd-rom drives to be developed.

Other Common Hardware Failures

No other common hardware failures are known to be specific to the M2 hardware. Failure of the cd-rom drive and a dead battery on the RTC chips are the two commonly known points of failure for M2. Therefor if you encounter any other hardware failures, you are in essence treading into “one-off” repairs to the board.

Note : certain rumors state that the M2 was prone to overheating due to the large metal cage it lives in. Many people run the hardware with this top cage removed as a precaution. It may or may not be of any efficacy.

Converting M2 Games to Run on Non-Target Hardware

Due to the “console” like nature of the M2 hardware, some (if not all, see below) M2 games can be patched to run on non-target M2 boards. A tool exists, known as “Windowskiller M2 Arcade Patcher” that allows M2 disc images to be patched to run on alternative M2 boards that they were not intended to run on. The games supported by Windowskiller M2 Arcade Patcher are as follows

Evil Night / Hell Night
Battle Tryst
Heat of Eleven 98

The above games can be patched to run on any of the corresponding M2 boards (Battle Tryst will run on Evil / Hell Night and Heat of Eleven 98, Heat of Eleven 98 will run on Evil / Hell Night or Battle Tryst, and Evil / Hell Night will run on Battle Tryst or Heat of Eleven 98)

Note : medium resolution versions of Hell/Evil Night and Total Vice can be patched with their standard resolution counterparts and run on the same pcb, so long as the resolution DIP is set correctly and the “encryption” RTC character strings are set appropriately to the target pcb values.

Within the arcade / M2 community, it's a known “fact” that Total Vice can be converted to run Polystars, and that “all M2 games can be run on any of the M2 boards”, but this is a bit of a misnomer. While Tobe! Polystars can run on Total Vice hardware containing the first revision (623b01.8Q) bios file, Total Vice CANNOT run Battle Tryst / Heat of Eleven 98' / Evil and Hell Night without swapping the BIOS chip for the newer 636a01.8Q BIOS file.

To convert Tobe! Polystars to Total Vice target hardware, manual conversion of the DISC NAME / YEAR OF RELEASE / REGION string of hex characters must be altered in the launchme.m2 file to correspond to the correct characters expected of an original Total Vice board set. (see encryption section below)

Initializing RTC Chip for Conversions

When first inserting and attempting to run a patched M2 disc, you will fail the RTC hardware check. Hold down the TEST button during the second boot, and the RTC will reinitialize itself with the correct code to run the patched game on the non-target hardware. To revert back to the original software that your specific M2 hardware was designed for / to run a different patched image, repeat the RTC Initialization via the test button to swap games with an alternate cd.

Stripping RTC Checks from Game Code

Rumor has it that ISO's of the M2 games exist where the RTC check code has been stripped from the executable code, so that the hardware tests will never even attempt to look for a data match between what's written in the ISO / on the EEPROM / on the RTC chip. Reading the contents of the RTC chip dumps, there are no references back to the executable files or the EEPROM. Therefor it is a safe assumption that whatever code is responsible for the encryption checks exists in either a) the launchme.m2 file or in some other file on the compact disc that came with the game or b) on the BIOS chip file that controls POST operations or C) within the driver files contained on the game discs.

Known Issues With Patched ISO's

Games such as Total Vice utilized sound samples stored on ROMS on the M2 PCB stack sub-board, which allowed the playback of sound effects via a speaker installed in the Total Vice light gun. When patching ISO's for other hardware, if these specialized ROMS are missing (which they will be, as they were game dependent and placed on the third sub board in the pcb stack) some features of the game such as sound effects will be missing. This will not effect the operation of the game nor will it cause it to crash ; you will just encounter missing elements during gameplay.

(Note : if using an Evil/Hell Night light gun with Total Vice, the absence of the speaker inside the gun itself will cause the game to lack gunshot sound effects, even if the sub board is present. Audio output for these ROM sound effects is not mixed into the mono or stereo output, but comes from a two pin connector on the JAMMA board of the pcb)

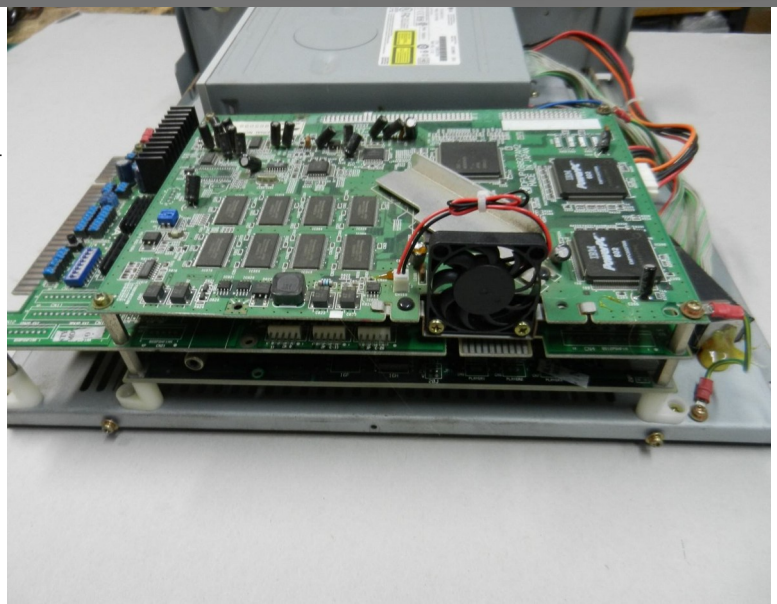
“The Polystars Exception”

Polystars is the only M2 hardware that has 4MB vs 8MB of RAM installed on the top PCB. Due to this reduced RAM, no other M2 games can be patched to run on Polystars native M2 hardware due to RAM insufficiency. The M2 top PCB does possess unpopulated areas for these four (4) additional RAM chips to be soldered in, but this procedure would a) require matching chips and b) require an exceptional soldering job. Adding in an additional 4MB of RAM may in fact allow Polystars boards to run the four other M2 games, but that is only theoretical. Due to the lack of a RTC chip on the Tobe! Polystars board, this may preclude any games running even if additional RAM is introduced. Considering the scarcity of M2 hardware, the safest bet is to buy any board OTHER THAN POLYSTARS if you want full patching compatibility.

Note : see next page for visual comparison of Polystars M2 PCB vs Hell Night PCB for RAM DIFFERENCES

POLYSTARS PCB – NOTE 4MB POPULATED RAM CHIPS W/ FOUR BLANKS

HELL NIGHT PCB – NOTE 8MB RAM CHIPS



Unique Hardware Features to Specific M2 Boardsets

Total Vice and Evil / Hell Night all possess specific hardware specific features in regards to their specific boardsets or standard kit equipment components. These have been listed below.

1 : Total Vice has a third PCB with sound samples stored in ROMS that allow audio sound effect playback via speakers installed in the Konami Light Guns in the Total Vice Kit

2 : Evil / Hell Night guns have a positional mercury switch installed within the gun body housing. Upon pointing the guns straight up, a “charge shot” will become available in-game that is more powerful than a standard shot. These switches are only installed in Evil / Hell Night specific light guns.

Note : Four pin HAPP light guns are compatible with Total Vice / Evil Night, but you will lose the above mentioned special hardware features when utilizing this particular hardware.

Assumed Rarity of Each Game Released

In the time spent researching the M2 hardware and games, and actively seeking out PCB's to purchase, the following is a safe estimate as to the rarity of each of the five games released by Konami, in descending order.

1) Heat of Eleven 98

two known instances of this being in the possession of a collector, only released in EAA / European market. I have never seen one for sale

2) Hell Night / Evil Night

three known instances of possession of collectors, only released in EAA / European market. I own this particular board

3) Polystars

multiple known instances of possession by collector, JAC / Japanese market only. 5+ have sold in recent times. I own two of this particular board.

4) Total Vice

These boards were released in both the Japanese and American Markets and while still quite rare, seem to be the easiest boards to obtain. I own three of this particular board, in three different revisions.

5) Battle Tryst

Also quite rare. I know of two boards in private collectors hands. Sales happen quite infrequently but they do happen. 1 own one of these boards

Emulation status via MAME

Rumor has it that M2 emulation will finally be available via MAME before the end of 2018. There was a very rough M2 emulator available in the early 2010's that lacked any audio output and was extremely buggy. As a proof of concept it did show that M2 emulation is possible.

BIOS Differences Across Boards

Tobe! Polystars and Total Vice both use an earlier version of the M2 BIOS compared to Evil / Hell Night, Battle Tryst, and Heat of Eleven 98. Considering Tobe! Polystars and Total Vice were released in 1997 vs the remaining games being released in 1998, the differences in BIOS files are most likely due to minor revisions over time.

BIOS versions are as follows ;

Tobe! Polystars

623bo1.8Q

Total Vice

623bo1.8Q

(there is supposedly a newer bios revision of the Total Vice board but this is uncomfirmed)

Battle Tryst
636a01.8Q

Heat of Eleven 98
636a01.8Q

Evil Night
636a01.8Q

Hell Night
636a01.8Q

Considering Total Vice is the most common board known to host Tobe! Polystars conversions, we know that the matching BIOS file makes disc swapping more conducive to Total Vice versus other boards with a newer BIOS revision. Yet as mentioned above people have said that launching Tobe! Polystars is possible on other boards w/ a patched image, so the safe assumption is this has been done with a socketed BIOS chip and a burnt version of the older 623b01.8Q BIOS. Considering the JAMMA board on all five games is basically identical, there is no hardware specific obstruction to swapping BIOS chips. Considering the BIOS is socketed from the start it's quite likely Konami just dropped the newer revision BIOS chips into existing JAMMA boards from Polystars / Total Vice.

Note : to date, I cannot find any instance in hex that points to an individual bios file in the game cd code. Obviously this reference is in the code itself, but it must be obscured and not written out so that it converts to ASCII as either 636a01.8Q or 623bo1.8Q.

The fact that many bits of data in both BIOS files, when viewed in a hex editor, have references remaining to the home console variation of the M2 hardware (lines such as “insert cd into REAL multiplayer”, the designation used for the original 3DO REAL Interactive Player) leads me to believe both BIOS files are a bit of a splice job between the abandoned home console hardware and the Konami M2 hardware.

Regions for Konami M2 Games

For some releases more than one region code exists for the game disc. Even with these differences in regions, patching via the ISO patch tool allows different discs to be run across multiple boards. During the boot sequence, the hardware will read the data stored in the EEPROM (in hex) that defines the title, the year, and the region of the disc in the drive tray. If a match is found, the game will boot. Patching the ISO alters the data of the disc to match the data stored in the EEPROM, allowing the software to boot.

Regions for M2 software are JAA (Japan / Polystars / Total Vice), JAC / JAA (Japan / Battle Tryst), EAA (Europe / Heat of Eleven 98 / Hell Night) UBA (USA / Evil Night / Total Vice), JAD (Japan / Total Vice) UAC (USA / Total Vice) AAB (Japan / Total Vice) AAC (Japan/Total Vice)

There are multiple region versions of Total Vice across the United States and Japan, which most likely come down to possible target resolution differences, as both Total Vice and Hell Night run in medium resolution and have alternate region coding to the ISO files. There is also apparently a version of Total Vice that was built to run on the newer BIOS file (636a01.8Q) but I have never encountered this version myself.

Versions for Konami M2 Games

The third letter of each game code denotes the version of release. If the letter ends in A this is a first revision release, where a revision ending in B or C denotes a later revision. Games such as Battle Tryst had a glitched release for the A revision, and fixed this in the C release. No known B version has ever been found, so its possible some lettered revisions existed for internal testing at Konami only. Other than the glitch in the initial release of Battle Tryst, there are no noticeable or apparently differences between revisions of all the other Konami M2 games.

Preventative Maintenance

Considering the dual Motorola PowerPC 602 processors were never installed in any board with heatsinks attached, we can safely say that the chips do not need passive or active cooling installed on them. While adding thermal paste and a small cooling block may dissipate a small amount of heat, there is no method to mount a cooler on the 602s other than gravity.

The rectangular shaped passive cooling block installed over the custom graphics engine clearly does require cooling, as it was installed when the hardware was produced and a fan is provided to blow directly at this block. As it is removable via a plastic retention post, a best practices scenario would suggest removing this block, remove the heat transfer pad, reapplying a fresh pad, and remounting the block. Considering the age of the hardware, the heat transfer pads are quite brittle and not very effective.

As these boards were used in arcades, many could use a solid cleaning to remove years of dust. I suggest the highest percentage isopropyl alcohol you can obtain. Using simple cotton swabs (Q-Tips), dab a small amount of alcohol on the end of the tip and use the swab to remove dirt and grime on the pcb. As 99% isopropyl alcohol evaporates extremely quickly, there is a practically non-existent risk of damaging the board. For a best practices scenario, wait at least ten minutes before cleaning and powering on the pcb.

Duplication of Original Game Discs

Due to the inherent scarcity of both M2 hardware, and original game discs, best practices would be to duplicate the original game disc onto cd-r and run the software via backup copies. Considering the M2 uses the OperaFS file system with a different sector size than traditional data discs, ripped images of the software must be prepared correctly in order to run on original M2 hardware.

The best option for this is Xduplicator Beta 5. As long as you rip and write cd's at no more than 8x speeds, and save to a .BIN and .TOC format, Xduplicator will correctly read and rip the OperaFS data and produce an exact 1:1 burnable copy that will be read and run correctly on Konami M2 hardware.

To verify a disc was written correctly, download OperaFSReader and open the disc with the application. If the disc has been correctly written, the application will properly identify the disc having an OperaFS file structure, and will display the disc contents on screen. If the contents are shown, you have a working copy. If the disc fails to read, the cd was not burnt correctly and WILL NOT run on any M2 hardware.

To rip to ISO and burn an effective OperaFS disc, BurnAware Free will effectively create an ISO from an original or cd-r M2 OperaFS disc and burn a copy correctly. This is important when using the Konami M2 Patcher program, as it only allows patching of ISO files. This avoids having to utilize a hex editor and manually patch the RTC coding out by hand.

Note : if you are having issues using the M2 patching program, any free hex editing application such as HexEdit will allow you to manually alter ISO files so that you can patch the ISO yourself. Just search for your release number and region code (810EAA02 for Hell Night) OR the release year (1997 or 1998) and scroll through the lines of hex until you find the entry that lists 1998GN810EAA02. (for the Hell Night example)

If you wanted to manually edit Hell Night to run on a Battle Tryst pcb, you would leave 1998 alone in hex, as well as GN, but you would edit 810EAA02 to read 703EAA02. Changing these values effectively turns your ISO from a Hell Night ISO into a Heat of Eleven ISO. This allows disc swapping to occur. While the patching software is MUCH easier, manually editing the iso in Hex is still quite easy and 100% effective.

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APPENDIX

1 – Dip Settings : C = closed (left) O = Open (right)

Looking down at top PCB w/ JAMMA edge facing you

CO
CO

Denotes Standard Resolutions

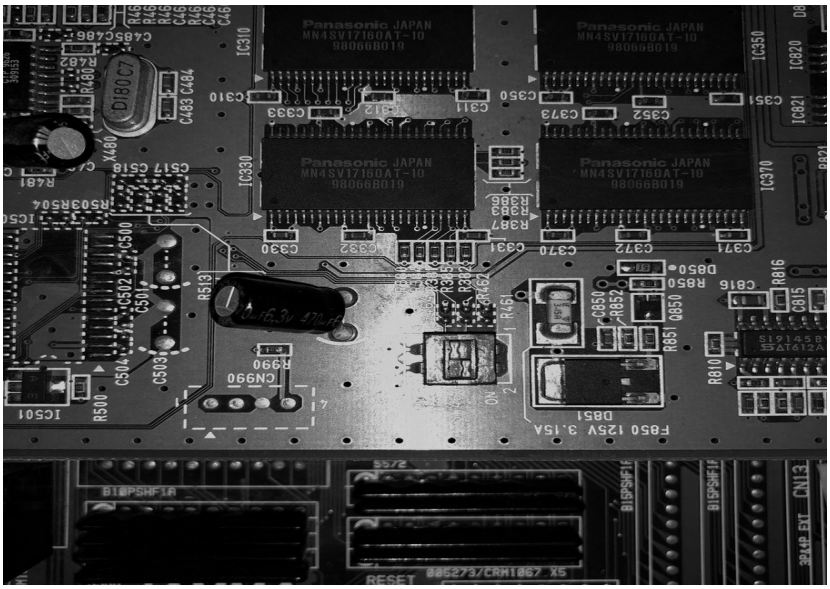
CO
OC

Denotes Medium Resolutions

OC
OC

Fails to boot anything

(BELOW SHOWS MEDIUM RESOLUTION DIP SETTINGS. TO SWITCH TO STANDARD RESOLUTIONS, TOGGLE BOTTOM TO THE LEFT, OR CLOSED POSITION)



APPENDIX 2

2 – AUDIO OPTIONS

MONO AUDIO : Schematics of all M2 boards show ONLY Tobe! Polystars providing mono audio via the JAMMA edge on pins 10 and L (parts side and solder side respectively), but ALL M2 JAMMA boards will output mono audio via these pins, even if the schematic does not list it. (Total Vice / Hell Night / Evil Night schematics have 10 and L unpopulated, but mono audio is verified via testing to run through these pins) You must turn DIP 1 on the JAMMA pcb to off to obtain MONO audio output

STEREO AUDIO : Stereo audio is provided by a four pin header on the JAMMA pcb. The AUDIO IN comes from a four pin stereo port on the back of the cd-rom drive, and is fed into the JAMMA board. I have not personally tested this yet, but considering these four pin stereo setups were a classic 90's computer component, one would anticipate you can bypass inputting the four pin hardness into the JAMMA board's audio IN and go directly to an external source.

Audio interference on JAMMA edge : All M2 pcb's exhibit electrical interference when outputting MONO audio from the JAMMA edge. When the cd-rom drive spins up to access data, an electrical humming sound will come out of both speakers. During gameplay this is not noticeable but on silent attract modes and high score screens, this hum is quite evident. It is not an issue with the hardware that needs to be "fixed", but just a byproduct of accessing MONO audio from the board itself.

APPENDIX 3

3 - "Encryption"

I intentionally left encryption in quotation marks, as the protection in place on M2 hardware is quite rudimentary compared to what one thinks of with modern encryption.

Each M2 game is coded with a number, (GN810 in this example) a year of release (1998 in this example) and a region (EAA in this example). In essence these characters combine to make the "password" to run M2 software on M2 hardware.

Upon booting up the PCB with a game disc in the drive, the hardware tests will check the title/year/region code in the launchme.m2 file on the physical cd, and check it against what is recorded in the eeprom / RTC chip. (Except Tobe! Polystars and Total Vice, which do not have an RTC chip on

the PCB) If a match is made the hardware test will pass and the game will boot. If a mismatch is found, the M2 hardware will restart and continue to boot cycle infinitely.

By altering the title/year/region on the cd, and reinitializing the eeprom / RTC chip via the test switch (instructions in main document), we can force the data to make a a match and boot games on non-target hardware.

In naming conventions, many available ISO's for M2 games will be written as 810eaa02. (Hell Night used as example) While this name DOES include all the information that is encoded in the eeprom on the pcb / in the launchme.m2 file on the physical cd (launchme.m2 is the executable), is is not in the correct order you will find the data in a hex editor.

To manually patch an ISO, you want to open the ISO file itself in a hex editor and use the search field to look for the corresponding numerical value

1997 OR 1998

While there may be more than one instance of 1997 (Polystars / Total Vice) or 1998 (Evil/Hell Night, Heat of Eleven 98 / Battle Tryst) in hex, in the line DIRECTLY above one instance of 1997/1998 you will find the release number (in this example GN810) and DIRECTLY to the right you will find the region code (in this instance EAA)

To patch your iso via a hex editor to run on other target hardware, you will rewrite 810 / 1998 / EAA to the corresponding values of the game you wish to run.

Example : Battle Tryst is 623 / 1998 / JAC
(numerical title / year of release / region code)

To run Battle Tryst on Evil Night hardware, you would swap 810 for 623, leave 1998, and swap EAA for JAC.

Save the hex file and burn as normal to obtain a patched M2 disc.

Note : to be 100% sure of patching, record data from hex editor for the disc you WANT TO PATCH to new hardware, and write down the correct title / year / region, before patching in hex to a new target hardware platform. Many instances of the correct values available online are incorrect / missing data)

APPENDIX 4

4 – The OperaFS File System

All 3DO / M2 discs are written to the OperaFS file structure, which is a non-standard format. Not every burning and/or ripping program will be able to handle the OperaFS discs. You need to utilize software that does not try to open the disc, but just copies bit for bit the data on the cd.

Xduplicator Beta 5 will effectively create bin/toc copies of M2 discs and burn them correctly

BurnAware Free will effectively create iso copiesof M2 discs and burn them correctly.

APPENDIX 5

5- CHDMAN and CHD files found online

If you download a verified working CHD of any of the Konami M2 games, you can extract a .bin and .cue file from the CHD itself for burning to disc. In the command prompt on Windows, use the below code to obtain the .bin and .cue files. (chdman and CHD file must be in same directory on drive)

chdman extractcd -i file.chd -o file.cue -ob file.bin

file = chd file name. If Hell Night = GN810EAA.CHD

-ob must always be your .bin file, as its a binary extract of the date contained within the CHD.

These chdman extracted .bin and .cue files can be effectively burnt with Xduplicator Beta 5

APPENDIX 6

Launching M2 Arcade Games on the Panasonic Kiosk

To date there is no way to launch Konami M2 games on the Panasonic FZ-21S1 or FZ-35S due to bios incompatibilities. Checking both arcade BIOS files against the console M2 bios with a program such as BeyondCompare (which allows you to see what lines of code are identical, and shows where code differs) tells us that while a good 50-60% of the lines of code in each bios are IDENTICAL, there are enough differences to create an incompatibility between the arcade and home hardware releases. Additionally the arcade game discs have drivers contained within the files of the disc itself that match the JAMMA specific hardware for the Konami releases.

While it may be possible to alter and rebuild the Konami M2 discs with the correct drivers and amend references to the bios to match the console bios contained within the kiosks, there would still remain no way to control any of the games, as in code all button inputs correspond to their respective JAMMA pins, while the light guns require a proprietary connection that does not exist on any of the kiosk releases. In essence arcade M2 releases will not be feasible on the kiosk hardware, as it would require A) a bios and driver rebuild and B) rewriting game code to alter button input coding. Considering the source code for these games does not exist out in the wild, attempting this purely via hex editing is basically an impossibility.

APPENDIX 7

"Why does my cd not load"?

The M2 boot sequence for Konami arcade boards is quite odd. If you power the system on with a cd inserted into the cd-rom drive, you will likely encounter a boot loop at the color bar OS screen. If you eject the tray and close it during this OS BOOT screen, the cd-rom will load and the game will play. I do not have the slightest clue why this is, but a disc drive that does not load on power on is not a guarantee of a hardware fault ; it could just be that the disc is not read quickly enough before the boot sequence loops.

APPENDIX 7

the M2 "Experience"

In all of the discussion on the 3DO / Konami M2, the most common question asked is "how is it"? While we will truly never know what would have happened had the M2 been released to the home market as a console, the Konami games give us a great example of what would have been "launch window" quality games.

The graphics on the M2 are definitely above and beyond what the Nintendo 64 / Playstation 1 / Sega Saturn could produce. Polygon count is in the 500-700,000 range with all the effects and texturing applied, and the games run, minus a few moments, at a stable locked 60 frames per second.

Unfortunately the Konami games definitely seem rushed in that they are not very polished graphics wise. Total Vice is a blocky mess with terrible (lazy) texture work throughout. Enemy models are low poly count and faces are poorly texture mapped to the models themselves. Some textures are so blurry as to be almost indistinguishable as to what they were intended to convey. The best (worst) example of this are trees inside an office building on Stage 2. They are flat 2D textures that, if you squint, MIGHT look like trees with a healthy imagination.

Interestingly enough, Evil Night (released one year later) has excellent for the time models and texture work all while running on the same hardware. Either the development team just "tried harder" on this game, or the development tools evolved in the same timeframe. If you put Total Vice up against Evil Night, it almost seems like Evil Night runs on a newer revision of the hardware that is more powerful (which we know is not the case). Examples of volumetric fog effects are contained within Evil Night, and the texture and model work shows a marked improvement over Total Vice.

Tobe! Polystars is probably the most enjoyable experience on the M2 platform as far as gameplay is concerned. It has infinite replayability and a fresh enough (for 1997) take on the shmup genre as to be something collectors and shmup fans should seek out. As an added bonus the soundtrack is filled with catchy pop style tunes that perfectly fit the game.

Heat of Eleven 98' and Battle Tryst are both competent yet forgettable examples of the sports and fighting genres. Only collectors would want to seek these out, as better examples of arcade games could be readily located and purchased for much less money. Battle Tryst is definitely a poor mans Tekken or Virtua Fighter, except its infinitely rarer and more expensive to obtain.

It is not at all surprising that Panasonic / Matsushita pulled the plug on the M2. It was more

powerful than the PS1/N64, but with the Dreamcast looming 12-18 months out from any prospective M2 launch it would have been eclipsed performance and visual wise quite quickly. Considering the Dreamcast killed SEGA's home console division due to the impending launch of the superior PS2, it's quite likely that the M2 would have died an early death with the Dreamcast itself on the horizon.

All five of the Konami M2 games were rumored to be slated to release on the M2 launch date/window. While all these games in their own right are decent to great, none would have had people lining up to purchase the M2 console. D2 would have been the "killer app" to purchase, and while I to this day wish I could experience D2 as it was originally intended, D2 would not have been a "must have" game by any stretch of the imagination.

Other games that were targeted for M2 were Iron and Blood (a D&D based fighting game released for the PS1. It's absolutely horrible. An alpha demo exists for M2 in collectors hands) IMSA Racing (released. Competent and good looking for its time racing game) and Power Crystal (an RPG with screenshots released, no video of gameplay or beta known to exist).

Given the fact that the M2 was VERY powerful when it was announced in 1996 yet became slated to be eclipsed within a year of its delayed 1998 launch window, combined with the fact that none of the games in development were anything that would cause the system to be a must buy for fans leads Matsushita canceling the M2 to in the end be a smart move. The writing was on the wall.

Even with all this, the loss of a home console version of the M2 hardware was a huge loss to gaming in general. It would have been great to see what M2 was capable of and to be able to experience D2 as it was originally conceived. Had M2 been even a moderate success, it's successor the MX was already existing silicon that was running code. We could be playing on the M5 today alongside the Xbox One / PS4 / and Switch.

Instead we got a short lived arcade platform and a few leaked betas. It's been a huge undertaking to write this document and collect hardware for the platform yet its also been quite rewarding and fulfilling to obtain and learn what can be known about the M2.

It's Alive!...in collectors hands and those of us who were highly disappointed when it was canceled as a home console. I still remember getting my $10 deposit back in cash from EBGames at our local mall...I'd have rather gotten my M2!